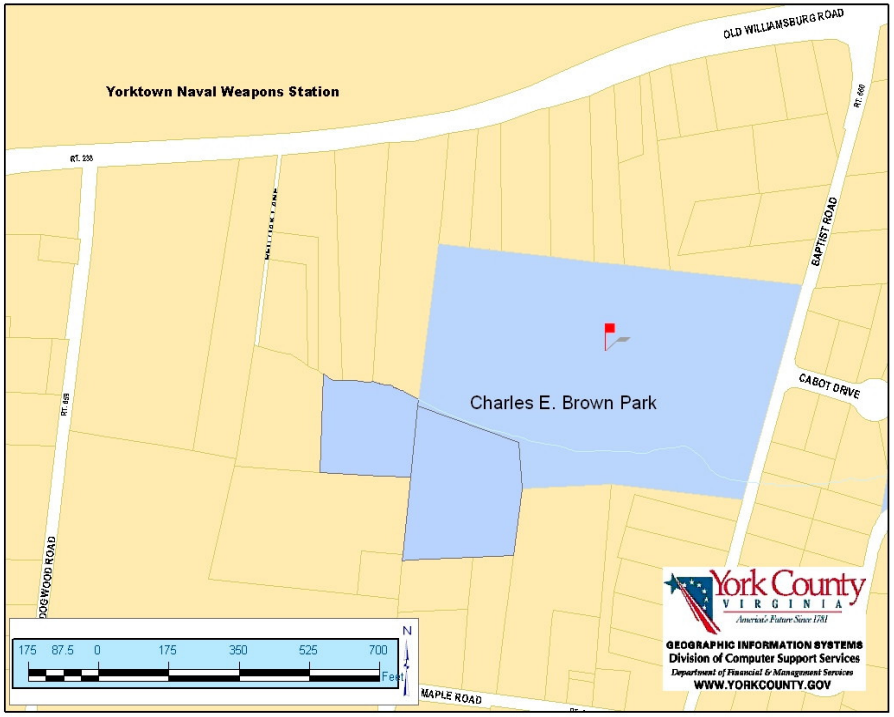
Charles E. Brown Park



This park is named after Charles E. "Professor" Brown, a Lackey resident and former York County schoolteacher, who had a keen interest in helping young people. Brown, who died in 1975, was also a former president of the State chapter of the NAACP.

Charles E. Brown Park, located on Route 238 in Lackey, was the County's first park and is the only park land purchased by the County. Construction of this 10-acre facility was completed in 1978.

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York County
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Wetlands Interpretive Sanctuary for Education

at Charles E. Brown Park

A Cooperative Project of
York County Community Services,
Virginia Cooperative Extension, and
York County's Environmental and Developmental Services

Community Services Department

Virginia Tech
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Virginia Cooperative Extension
Knowledge for the CommonWealth

VIRGINIA STATE UNIVERSITY

E&DS

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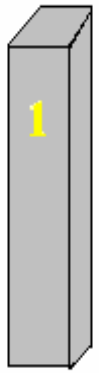
*Glossary terms are noted with an asterisk

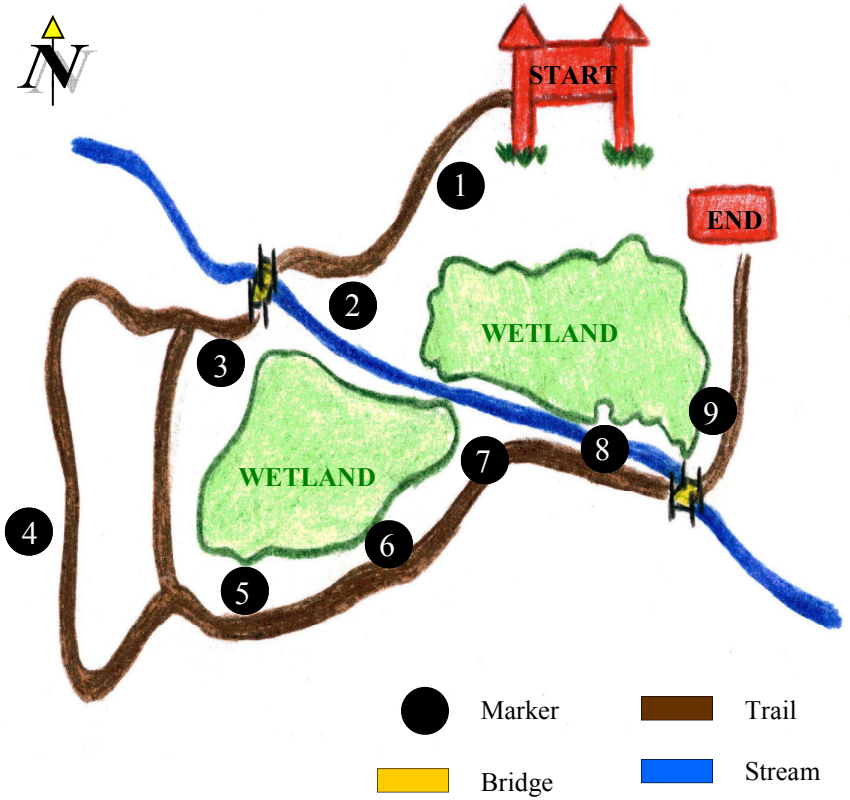
Notes

Introduction

Welcome to the York County Wetlands Interpretive Sanctuary for Education (WISE) at Charles Brown Park! You are at the start of a half-mile trail that borders approximately two acres of wetlands. This pamphlet will be your guide as you explore this interesting environment. Along the trail, there are nine designated markers that correspond to numbers found on your map. At each marker, you will learn something new and exciting about wetlands, observing different plants and animal species along the way. We hope you enjoy your experience!



Look for these markers along the trail.



WISE History

Why was this wetland created?

When Tabb Library was built in 1998, approximately one acre of forested wetlands was filled to construct the building and parking lot. Pursuant to section 404 of the Clean Water Act, York County was required to meet one of two criteria: The County could either pay an assessment to the Army Corps of Engineers as compensation for the one acre of filled wetlands, or the County could establish new wetlands based on a two-to-one acreage replacement requirement. The County selected Charles Brown Park as the location to create the wetlands, using it as an educational opportunity for its citizens.

How was this wetland created?

After choosing the location, the County purchased two parcels of land on November 20, 2001 located behind the park. A drainage study began in 2002 to ensure there was enough water for the project to be successful. Groundwater was monitored in various areas, and soil excavation showed that the bottom of the basin was covered with soil indicative of previous wetlands.

Over a three month period, community service workers from York County performed a major clean up of the newly-acquired land. Workers cleared nearly one hundred 33-gallon drums of garbage and recyclable materials including glass, tin, aluminum, and tires. Large amounts of brush were also removed.

In spring 2004, over 9,250 herbaceous* plants were planted in the wetlands. Since ample water was available, Black Tupelo and Bald Cypress were added to the wetlands. In total, over 800 trees and shrubs were planted in

Contact Information

For more information about WISE and the members of its cooperative project, please contact the following:

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Designed and Created by
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Glossary

anaerobic – oxygen deficient; does not need free oxygen to live or exist.

apogamy – an embryo develops without fertilization; for ferns, it is the development of a sporophyte from a gametophyte without fertilization.

catkins – unisexual flowers, without petals, clustered in the form of a spike.

conifers – evergreen trees and shrubs that have needles or scale-like leaves; includes pines with true cones and yews with arillate fruit, an exterior covering or appendage of some seeds.

ecosystem – a community of living organisms such as bacteria, plants, and animals that interacts with its environment in a functional unit.

floodplain – land susceptible to flooding by lakes, rivers, and streams.

girdling – disrupting the circulation of a plant, water and nutrients, by encircling the plant and cutting into its cambium; girdling can kill a plant.

herbaceous – consisting of little or no woody tissue; a leaf is considered herbaceous.

rhizomes – an elongated horizontal plant stem that grows underground; unlike a true root it possesses buds, scale-like leaves, and nodes.

riparian – terminology used to explain the area that is near or located on the bank of a river or tidewater.

seeps – a spring where fluid slowly oozes out of the ground to the surface, forming a pool.

Volunteers helped with wetland planting in spring 2004.

fall 2004. The trees at the start of the trail were planted the following April by the Virginia Cooperative Extension.

Mid-Atlantic Realtors, a private partner, donated the kiosk, built the foundation trail, and constructed two bridges. The shorter loop of the trail was added by the County, completing the trail in the summer of 2006.

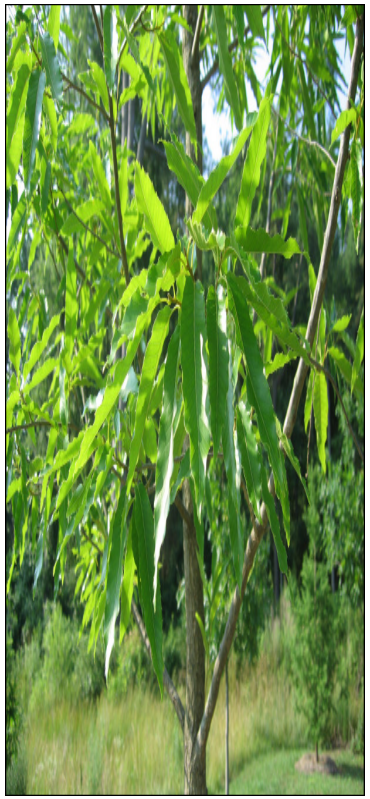
How was this wetland funded?

The wetland was mainly funded through two different grants. The National Fish and Wildlife Foundation (NFWF) awarded York County a grant from the Chesapeake Bay Small Watershed Grants program. This grant, requiring matching funds from the County, was used to restore a portion of the Great Run – a stream located on the property – to its natural meandering flow, and to create and stabilize an adjacent floodplain* and wetland. The second grant, the Virginia Department of Forestry Grant, was used for trees in the riparian* buffer and educational materials for the public.

1 Riparian Forest Buffer

As you enter the trail, you pass through a corridor of trees including the Sawtooth Oak (*Quercus acutissima),* the Overcup Oak (*Quercus lyrata)*, the Common Bald Cypress (*Taxodium distichum*), and the Dawn Redwood (*Metasequoia glyptostroboides).* These and other trees you see as you walk the trail form a riparian forest buffer.

The Overcup Oak (above) is a native tree that can grow 90 feet tall, and is a member of the Beech Family. The leaves are highly variable, and have a shiny dark green surface, rounded lobes, and are usually pale gray-green underneath and hairy. The buoyant acorns use water as a means of dispersal. They are a food source for ducks, wild turkeys, hogs, deer, squirrels, and other small rodents. They are drought and cold tolerant.



The Sawtooth Oak (above) can grow as high as 70 feet, and was introduced to the U.S. around 1920 from Eastern Asia. The leaves are about 4 to 8 inches long and are characterized by their jagged edge. The acorns, the seeds of the tree, are enclosed in a cup with long, spreading, recurving scales. This oak is resistant to disease and insect damage, and does poorly in flooded areas with poorly drained soil.

Highbush Blueberry or Vaccinium corymbosum (left) is an erect shrub that grows in the eastern half of the U.S. Maturing at up to 15 feet tall, this tree can also be found in the understory of some woods. The fleshy fruit of this plant is a nutritious food for wild animals, and is the species most often used in blueberry production and commerce. The Black Gum or Nyssa sylvatica (right) is a common deciduous tree found in a variety of sites from swampy areas to dry uplands. Reaching heights up to 50 feet tall, the Black Gum is valued for its use in a variety of wood products and for its support of wildlife. The tree is among the first to turn color in late summer, with its foliage turning a bright red.

Sources used in this pamphlet include:

Silberhorn, Gene M. *Common Plants of the Mid-Atlantic Coast: A Field Guide*. Baltimore: The John Hopkins University Press, 1999.

US Army Corps of Engineers. 2006. Recognizing Wetlands. (www.usace.army.mil/inet/functions/cw/cecwo/reg/rw-bro.htm, 5 July 2006). Washington, DC.

USDA, NRCS. 2006. The PLANTS Database (http://plants.usda.gov, 5 July 2006). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

9 Learn More

Wetlands are protected by both state and federal regulations. To learn more about wetland regulations, identification, and wetland flora and fauna, please see the following sources:

Great Blue Heron

Army Corps of Engineers
www.usace.army.mil/inet/functions/cw/cecwo/reg

The Chesapeake Bay Program
www.chesapeakebay.net/wetlds1.htm

Environmental Protection Agency
www.epa.gov/owow/wetlands

Fish and Wildlife Service
www.fws.gov/nwi

National Oceanic and Atmospheric Administration
www.nmfs.noaa.gov/habitat/habitatprotection/wetlands/index.htm

Natural Resources Conservation Service
Wetland Reserve Program*: www.nrcs.usda.gov/programs/wrp*
The PLANTS Database: *http://plants.usda.gov*

VIMS Teaching Marsh
www.vims.edu/welcome/tour/tmarsh

Virginia Cooperative Extension
www.ext.vt.edu/pubs/waterquality/448-106/448-106.html

Virginia Department of Environmental Quality
www.deq.state.va.us/wetlands/homepage.html

The Bald Cypress (left) and Dawn Redwood (right) look very similar. Each of these trees is a deciduous conifer, which sheds its needles in the fall. The leaves of the Bald Cypress are alternate, linear, and flat with blades spreading around a twig. The Dawn Redwood's leaves are much like those of the Cypress, except they are opposite in arrangement and slightly shorter in length. Unfortunately, the Bald Cypress is susceptible to brown pocket rot caused by a fungus. The forest tent caterpillar and fruit-tree leaftroller larvae web and feed on needles which eventually leads to the death of the Cypress. Although the Dawn Redwood was thought to be extinct, it was brought from China to the U.S. in around 1948.*

Riparian forest buffers are areas of forested land adjacent to streams, rivers, marshes, or shoreline that form the transition between land and water environments. They play an important role in maintaining the health of wetlands by:

- Helping maintain the integrity of the stream channels and shorelines,
- Reducing the impact of upland sources of pollution by trapping, filtering, and converting sediments, nutrients and other chemicals, and
- Supplying food, cover, and thermal protection to fish and other wildlife.

2 Importance of the Stream

The Great Run's new meandering watercourse.

Historically known as the Great Run, this stream was reconfigured to a more natural curving watercourse. These curves, known as meanders, promote the health of the stream by providing habitat for aquatic organisms and lessening erosion. The wetland benefits from reconstructed floodplains where the stream can overflow into the emergent wetlands. As the stream proceeds through the County, it collects surface runoff from surrounding neighborhoods and groundwater from seeps* and natural springs. The stream runs southeast to Beaverdam Creek, passing through the Newport News City Reservoir. After flowing to the Warwick River and eventually the James River, the Great Run meets its final destination in the Chesapeake Bay.

Source: Robert H. Mohlenbrock@USDA-NRCS PLANTS Database/**USDA NRCS. 1992. *Western wetland flora: Field office guide to plant species.* West Region, Sacramento, CA.**

Broadleaf Arrowhead (left) is an emergent plant that reaches heights up to 4 feet. Each leaf lobe has a distinctive vein radiating from the leaf base. The flowers bloom from July to September, and seeds are produced in the fall. Seeds are often eaten by waterfowl, songbirds, muskrats, and beavers. This plant is often called Duck Potato, and can extract large amounts of metals and nutrients from sediment and water.

Photo by Larry Allain, USDA-NRCS PLANTS Database

Lizard's Tail (above) is an herbaceous perennial that grows 1 to 2 feet tall and is found in ditches, swamps, marshes, and wetlands. It blooms from spring to early fall and its blossoms attract insects and bees. In the past, it was used for medicinal purposes by indigenous people.

Source: Robert H. Mohlenbrock @ USDA-NRCS PLANTS Database/ **USDA SCS. 1991. *Southern wetland flora: Field office guide to plant species.* South National Technical Center, Fort Worth, TX.**

Green Arrow Arum (above) is an aquatic perennial with triangular, elongated leaves that grow 1 to 2 feet long. Blooming from May to July, its seeds are particularly enjoyed by wood ducks, leading to its 'duck corn' nickname. This plant also benefits wildlife by providing cover for birds, reptiles, fish, and small mammals.

8 Benefits of a Wetland

Wetlands are the transition between dry land and water. Wetlands come in many forms, and not all wetlands are wet year round. Some of the many benefits of wetlands are:

- Improved water quality by breaking down, removing, or using nutrients, organic waste, and sediment carried to the wetland by runoff,
- Reduced severity of floods downstream by retaining water and releasing it during drier periods,
- Protected stream banks and shorelines from erosion,
- Recharged groundwater, helping reduce water shortages during dry spells, and
- Established food, breeding grounds, and resting areas for wildlife including many rare and endangered species.

Some wildlife seen at this wetland include frogs, ducks, egrets, turtles, and great blue herons.

Plant species seen from this sight include Pickerelweed (*Pontederia cordata*), Green Arrow Arum (*Peltandra virginica*), Broadleaf Arrowhead (*Sagitaria latifolia*), and Lizard's Tail (*Saururus cernuus).*

Pickerelweed (right) is an aquatic plant that grows 3 to 4 feet tall on the margins of rivers and ponds. The Pickerelweed's most noticeable feature is its spike of blue flowers that bloom from June until November.

Some of the plants that you can currently see from this site and along the trail are Joe-Pye Weed (*Eupatorium dubium*), Pokeweed (*Phytolacca americana*), Greenbriar (*Smilax rotundifolia*), and Privet (*Ligustrum sinense*).

If you are walking this trail in mid to late summer, July to September, you may see Joe-Pye Weed's (right) domed clusters of bright purple flowers. Reaching 5 or 6 feet tall, the nectar is a favorite of many butterflies and bees, and the seeds are often eaten by mice, mallards, and wild turkey.

Pokeweed (above) is a common, large-leaf plant growing up to 10 feet tall. Pokeweed blooms from July to September. Its fruit is a dark purple berry that grows in clusters on bright red stems. Although this weed has poisonous roots and foliage, the emerging shoot can be cooked and eaten as greens once the pink color appears. However, the shoots need to be boiled twice; discarding the water after each boiling. The berries were used as a dye by the early colonists and are used still today.

Greenbriar (above) is a woody, climbing vine with very sharp thorns. Although it provides excellent cover for animals such as rabbits, the plant harms other plants by growing over them. The flowers are pollinated by flies, and shiny black berries in the late summer provide food to many animals.

3 What is a Wetland?

Wetlands are areas that are covered by water or are waterlogged long enough to influence the types of soil and plants that grow there. Wetlands are recognized by three characteristics. They are —

- **Hydrology** – The presence of water at or above the soil surface during a large part of the growing season. Hydrologic indicators most often have to be viewed in the field. Frequency, timing, and the duration of saturation are hard to determine.

All three of these indicators have to be present during the growing season to be categorized as a wetland.

- **Hydric soil** – Soils that have anaerobic* properties (low oxygen content) due to longtime water saturation, ponding, or flooding during the growing season. The Natural Resources Conservation Service (NRCS) has identified over 2,000 different soils within the U.S. that are representative of hydric soils.

- **Vegetation** – Hydrophytic vegetation consists of water loving, macrophytic, plant life that grows in water, soil, or substrates that are oxygen-deficient due to saturation. The NRCS has identified more than 5,000 different hydrophytic plants.

Several plants you can see from this marker and all along the trail include Wool Grass (*Scirpus cyperinus*), Sweet Pepperbush (*Clethra alnifolia*), and Soft Rush (*Juncus effusus*).

Blue Flag Iris or Iris versicolor (left) is a native boggy area perennial that has lavender blue blooms in late spring, May to July. Although it is found in the coastal plain areas from Virginia to Louisiana, it is known to span as far north as Newfoundland. This Iris attracts butterflies, hummingbirds, and waterfowl. It is often used in water gardens as it is happy in areas where there is standing water year round.

Button Bush or Cephalanthus occidentalis (right) is an aquatic, tall, woody shrub that seldom exceeds 6 feet in height. The thickets of this shrub provide excellent nesting areas for songbirds and protective cover for frogs. Butterflies and honeybees thrive on the nectar of the fragrant flowers, and deer graze on leaves and twigs of this shrub. If you are visiting the wetlands in June or July, you may see the white ball-shaped flower heads of this plant, an abundance of creamy white flowers in dense round clusters about one inch in diameter.

7 Recognizing Wetlands

There are several different types of wetlands. These include bogs, marshes, pine savannahs, potholes, wet meadows, and many bottomland forests. Although it usually takes an expert to identify wetlands, there are several hints you can follow:

- The ground squishes when you walk on it at times during the year,
- Sometimes rainwater stands on the surface in areas for days or weeks,
- There are watermarks on trees or buildings where water covered the area in the past, and/or
- There are lines of debris washed onto the ground or layers of sediments left in trees or shrubs from past flooding.

The light green grass you see in the above photograph is called Rice Cutgrass or Leersia oryzoides. This grass acquired its name from the rough edges of its leaves which are sharp enough to cut skin. It can tolerate drought and flooding up to 6 inches. It is often used in conservation landscaping and is a food source for songbirds and waterfowl.

Wool Grass (left) is a tall, perennial sedge home to redwing blackbirds that weave and wind their nests about the sturdy stems. Growing over 6 feet tall, wool grass can be recognized by the dark brown fruiting clusters that can be seen in fall. These plants not only cleanse the wetland environment, but they provide food and cover for waterfowl and other wildlife.

Sweet Pepperbush (above) thrives on the sides of the trail. This 3 to 8 foot tall deciduous shrub is often found in damp thickets. During the summer months, you may see or smell its white flowers, which are important in providing nectar for bees, butterflies, and hummingbirds.

Soft Rush (above) is another tall plant whose stem grows upwards of 5 feet tall. The inconspicuous flowers of Soft Rush are yellow-green and bloom from June to August. Historically, the stems have been used by the Japanese to make tatami (sleeping mats), and were made into targets for training Samurai warriors in sword fighting.

4 Invasive Species

At this marker, you will notice a large Southern Magnolia (*Magnolia grandiflora*). This tree is often planted as an ornamental tree outside of people's homes. So why is it in the middle of the woods?

When the County bought these parcels of land, there was a very old structure located right behind this Magnolia. The remnants found around the building tell us it was most likely a house that was built when the Lackey Community was established.

The Southern Magnolia (above), known for its large fragrant white flowers that bloom in the spring, grows up to 80 feet.

Invasive Species

Plants found in areas that have been disturbed can tell us a story. Often, invasive species thrive in disturbed areas because they are free of natural controls such as insects and diseases that keep them in balance with their native habitats. Although invasive species such as wheat, soybeans, and tulips have become a

Source: Robert H. Mohlenbrock @ USDA-NRCS PLANTS Database. **USDA SCS. 1991. *Southern wetland flora: Field Office guide to plant species.* South National Technical Center, Forth Worth, TX.**

Japanese Honeysuckle (left) is the most commonly occurring invasive plant, overwhelming and replacing many native plants and vegetation. It spreads by rooting at vine nodes and utilizing animals to disperse seeds.

When the spore is released, it still has to be fertilized. However, this is not the only way in which a fern can reproduce. It can reproduce by spreading rhizomes* or through a process called apogamy*.

This picture (right) is of the Christmas Fern (Polystichum acrostichoides). This fern gets its name from the shape of its leaves which are thought to look like stockings.

Jewelweed or Impatiens capensis is a tall, leafy plant with succulent stems and pendent golden-orange flowers splotched with reddish brown spots. The exploding pods have earned this plant the nickname "Touch-me-not", and it flowers from July to October. While this plant needs moisture to grow, it often grows alongside another plant that grows just about anywhere: Poison Ivy. The sap of the jewelweed can be used to relieve itching caused by Poison Ivy and athlete's foot.

6 The Understory

The ground floor of the woods, where you have been walking, is known as the understory. Since most of the sun is blocked by the trees that grow above, the plants that colonize the understory tend to be shade lovers. The understory is important because it provides critical habitat for many different species of insects and small mammals.

You will notice several members of the Fern family growing within the understory all along this trail. Ferns are unique plants. Unlike most other plants that reproduce through pollination, ferns have spores. A spore is unlike a seed because it is only half of the genetic material needed for reproduction.

Several different fern species you will see at this marker and along the trail are the Royal Fern or Osmunda regalis (right), the Cinnamon Fern or Osmunda cinnamomea (bottom left), and Netted Chainfern or Woodwardia areolata (bottom right).

mainstay in our diets and economies, others have become pests. They displace native species, reduce wildlife habitat, and alter ecosystems*. Invasive species are typically rapid growing and mature with prolific seed production and distribution, which can be very costly to control.

There are several invasive species that you will see at this marker and along the trail. These include Japanese Stilt Grass (*Microstegium vimineum*), English Ivy (*Hedera helix*), Japanese Honeysuckle (*Lonicera japonica*), Common Periwinkle (*Vinca minor*), Wisteria (*Wisteria sinensis*), and Daffodils (*Narcissus pseudonarcissus*).

Wisteria (above) is a climbing vine that grows high in trees, growing up to 70 feet tall. It can kill trees by girdling, and often alters the availability of light for other plants.*

Japanese Stilt Grass (above) is a non-native, invasive, lime-green grass. This shade-tolerant annual is a native of Asia. It is most easily recognized by its leaves which are tapered at the end. In the fall, the plant develops a slight purplish tinge. This grass is also called Chinese packing grass because it was once used to protect porcelain during shipment. This may be the way it was introduced to the U.S.

5 Plant Succession

The Willow tree pictured above is a "volunteer" tree that has sprouted in several different places within the wetland.

As you look out upon the wetland from this marker, you will see several different trees. As years go by these trees will grow, and other "volunteer" trees and shrubs will appear from seeds deposited by birds, wind, and flowing water. As they grow, the shade they provide will encourage shade tolerant plants to take root, making some of the present species less prevalent. The maturing trees and shrubs will provide food, shelter, and nesting places for an increasing variety of wildlife. This process, where the flora and fauna of landscape changes through time, is called succession.

The Common Alder or Alnus glutinosa (left) can tolerate extremely wet conditions and is frequently found along lakes, rivers, and stream banks. Although it often appears as a shrub less than 15 feet tall, the alder can obtain heights of 40 to 60 feet. The tree is monoecious (mo-NEE-shus): It produces both male and female flowers. The male flowers mature into long slender catkins, and the female flowers take the shape of miniature pinecones.*

Sweet Bay Magnolia or Magnolia virginiana (right) is located right in front of you. Reaching heights of 60 feet, this tree has aromatic, spicy foliage and twigs. Its white, fragrant flowers bloom in late spring to early summer. The leaves, which are shed in the winter, are shiny green on top and whitish and finely haired beneath. The fruit is cone-like, elliptical, and has dark red seeds. The Sweet Bay Magnolia was introduced into European gardens as early as 1688. It was called "Beavertree" by colonists who caught beavers in traps baited with its fleshy roots.